

JAN 2 1925

PROCEEDINGS

of the

American Society

of

Civil Engineers



JANUARY, 1925

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PROCEEDINGS

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American Society
of
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VOL. LI

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No. 1

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AMERICAN SOCIETY OF CIVIL ENGINEERS

PROCEEDINGS

VOL. LI.

JANUARY, 1925

NO. 1

SOCIETY AFFAIRS

Seventy-second Annual Meeting

The Seventy-second Annual Meeting, to be held January 21-23, 1925, will furnish a technical program that should prove attractive to a large part of the membership. Special efforts have also been made to provide entertainment for the ladies and guests while the Technical Sessions are in progress.

A feature of the program that is believed will prove of interest to members and ladies will be the All-Day Excursion by train to West Point, N. Y., with luncheon, followed by winter sports, at Bear Mountain Inn.

A brief outline of the features of the meeting is as follows:

Wednesday, January 21.—The morning will be devoted to the Annual Business Meeting; the conferring of Honorary Membership upon Herbert Hoover, M. Am. Soc. C. E.; the presentation of Medals and Prizes for papers, to Messrs. B. F. Jakobsen, Joel D. Justin, C. M. Allen and I. A. Winter, and Rufus W. Putnam; the announcement of the newly elected officers; and the introduction of the President-Elect.

During the afternoon, when the Reports of Special Committees are being presented and discussed, the ladies will be entertained at bridge and tea, or matinee.

The principal social event, the President's and Honorary Members' Reception and Dinner Dance, will be held in the evening at the Hotel Pennsylvania.

Thursday, January 22.—The entire day will be devoted to meetings of Technical Divisions, the Highway, Sanitary Engineering, City Planning, and Power Divisions having programs. It is expected also that a new Division, Structural, will be organized.

In the evening, the Annual Smoker will be held at Society Headquarters.

For the ladies, there will be shopping tours in the morning, followed in the afternoon by sightseeing trips about New York, and in the evening a theatre party.

Friday, January 23.—A special train has been engaged for a trip to West Point, where the grounds, buildings, class rooms, etc., of the U. S. Military

Academy, will be inspected by the party, under the guidance of the Army Officers at the Academy.

Following the visit to West Point, the party will go by train to Bear Mountain Inn for luncheon, after which there will be winter sports, exhibitions of ski jumping, fancy skating, etc. Members will also have the opportunity of visiting the newly opened suspension bridge which spans the Hudson near Bear Mountain. This bridge has a main span of 1632 ft., center to center of towers, and accommodates four lines of traffic.

The party will leave the Inn so as to arrive in New York in time for members to take early evening trains, or to attend the College Alumni Dinners and Smokers which are becoming a feature of Friday evening of each Annual Meeting.

The Local Committee on Arrangements is interested in further developing such reunions. It is possible that there are graduates of certain colleges in attendance at the Annual Meeting, who are so few in number that they cannot hold independent meetings, but who would like to join with others similarly affected, in holding a combined meeting. All members interested in such a gathering, please write to Mr. William G. Grove, American Bridge Company, 30 Church Street, New York, N. Y. If prompt responses are received, it is possible that a Smoker might be arranged at this Annual Meeting.

Meeting of the Board of Direction

This is an abstract of the notes of the Acting Secretary and subject to approval by the Board of Direction at its next meeting.

A special meeting of the Board of Direction was held at the William Penn Hotel, Pittsburgh, Pa., on Monday, December 1, 1924, the following being in attendance: President C. E. Grunsky; Vice-President Lincoln Bush acting as Secretary; and, also, Messrs. Brown, Chester, Condron, Davison, Dyer, Farnham, Fenkell, Holmes, Loweth, Maitland, Merriman, Paul, Webster, Winsor, Yates, and Treasurer Hovey.

Resolution on the Death of Director Holland:

In respect to the memory of the late Clifford M. Holland, M. Am. Soc. C. E., the following resolution was unanimously adopted:

"On October twenty-seventh, nineteen hundred and twenty-four, Clifford Milburn Holland obedient to the call of the Divine Providence entered the Great Beyond. His friends and associates cherish his memory. He was strong, active, and fearless in the right, kind and considerate of all, a man of attainment, of initiative, and of native ability. Young in years, but old in accomplishment, he lived intensively, yet the joy of living was always his.

"Few, indeed, are endowed with the qualities of leadership, with the ability which inspires confidence and with the inborn knowledge of men and things as was he. His future lay great before him. His past was one of inspiration. His work stands as an enduring monument.

"We, his fellow members on the Board of Direction of the American Society of Civil Engineers assembled in meeting at Pittsburgh, Pennsylvania, on this

first day of December, nineteen hundred and twenty-four, desire to record our sorrow which is beyond the power of words to express. The Society and the profession have sustained an incalculable and inexpressible loss.

"In mute and reverent silence we stand in the presence of an inscrutable Providence. Yet in a measure we find our consolation in being the better and the richer because in the fullness of his life we knew him, and knowing did love and honor him.

"Our sympathy goes out to his family and to all he held dear and it is the desire of this Board of Direction speaking for all the membership of the Society that this expression be entered upon its minutes, be printed in its *Proceedings* and be, in suitable form, sent to the family of Clifford Milburn Holland."

Election of Honorary Member:

President Grunsky announced the election of Herbert Hoover, M. Am. Soc. C. E., as an Honorary Member of the Society.*

George T. Seabury Appointed Secretary of the Society:

The Board of Direction in Executive Session unanimously appointed George Tilley Seabury, M. Am. Soc. C. E., as Secretary of the Society, at a salary of \$10 000 per annum.

Mr. Seabury subsequently accepted the appointment, effective January 1, 1925.

Resolutions of Appreciation for Courtesies Extended:

The following resolutions of appreciation for courtesies extended to the members of the Board of Direction during the meeting by the Engineers' Society of Western Pennsylvania and Pittsburgh Section, were adopted:

"Resolved: That the Board of Direction of the American Society of Civil Engineers expresses its appreciation to the Engineers' Society of Western Pennsylvania for the courtesies extended by it to the Board in offering the facilities and services of that Society during its meeting in Pittsburgh.

"Resolved: That the Board of Direction of the American Society of Civil Engineers expresses its appreciation to the Pittsburgh Local Section of the Society for the many courtesies and hospitalities extended to the Board, including the dinner on the evening of December 1, 1924."

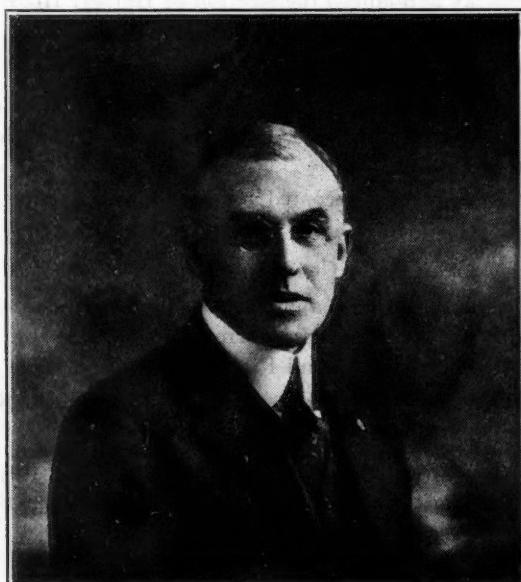
A vote of thanks was also tendered Vice-President George S. Davison and Director John N. Chester for entertaining the members of the Board at luncheon on December 1, 1924, and for their many services extended prior to and during the meeting.

Board of Direction Elects George T. Seabury, Secretary of the Society

The Board of Direction held a special meeting in Pittsburgh, Pa., on December 1, 1924, at which George T. Seabury, M. Am. Soc. C. E., was unanimously elected Secretary of the Society.

Mr. Seabury was born at Newport, R. I., in 1880, and was graduated from the Massachusetts Institute of Technology in 1902. After a few years of miscellaneous experience in sanitary, highway, subway and terminal work, he

joined the staff of the Board of Water Supply, New York City. His nine years in this work included two years as First Assistant to the Division Engineer on surveys and field studies for Ashokan Reservoir and Ashokan Dam; later, for two years, one of two special assistants to the Chief Engineer of the Catskill Water Supply engaged on special studies and as representative in organization matters relative to force of 1 000 to 1 200 engineers; and, finally, for five years, First Assistant to the Division Engineer in charge of the construction of a section of Catskill Aqueduct containing tunnels, a special type of aqueduct, gate-houses, an aerator, a Venturi meter, the Kensico Reservoir, and Kensico Dam.



GEORGE TILLEY SEABURY

Mr. Seabury's next engagement was with the Board of Water Supply, Providence, R. I., as Division Engineer in charge of surveys, field investigations, and studies for a reservoir, dam, filters, rock tunnel, and aqueduct. He was also engaged as Division Engineer at the beginning of actual construction of this work.

During the World War, Mr. Seabury as a Major in the Construction Division, served as Supervising Constructing Quartermaster in charge of construction at Camps Devens, Upton, Mills, Merritt, Dix, Meade, and Lee (April, 1918, to June, 1919).

For the succeeding four years he was a general contractor, as President and General Manager of George T. Seabury, Inc., specializing in road construction.

Since March, 1923, Mr. Seabury has been Manager of the Providence Safety Council, organizing this work from practically an abstract idea to a going organization with more than 4 000 members. His efforts have included news-

paper and special articles, publicity, studies, analyses, and addresses, applied chiefly to the automobile situation, and have resulted in a decrease of 21% in automobile accidents in Providence, notwithstanding a 25% increase in registered vehicles.

Mr. Seabury will assume his duties with the Society at the New Year.

December Meeting Discusses Transportation

The Society meeting of December 10, 1924, had as its topic "Waterway and Railway Equivalents." The paper on this subject, by Maj.-Gen. W. M. Black, U. S. A. (*Retired*), M. Am. Soc. C. E., published in the August, 1924, *Proceedings*, was capably epitomized by Gen. Black's son, Roger D. Black, M. Am. Soc. C. E., and illustrated on the blackboard and on the screen by actual examples of waterways, water carriers, and experiments. By special effort C. H. Markham, of Chicago, Ill., President of the Illinois Central Railroad, combined this meeting with a business trip. In his discussion, Mr. Markham emphasized the economic failure of American inland waterways and the fallacy of comparisons with European systems. He contended that railroads could care for any prospective increase in traffic without recourse to relief by waterways. Vice-President Lincoln Bush, who presided, took occasion to thank these gentlemen for their courtesy in presenting so ably and instructively their views.

The general discussion which followed dwelt on various features suggested by Gen. Black's paper. Col. Edward Burr, U. S. A. (*Retired*), M. Am. Soc. C. E., stressed the necessity of public ownership of waterways and highways as a National policy. Both W. G. Atwood and E. C. Church, Members, Am. Soc. C. E., pointed out the importance of some costs often considered as secondary, particularly the terminal charges. William H. Burr, M. Am. Soc. C. E., submitted a written discussion to be published later. Col. John R. Slattery, U. S. A., M. Am. Soc. C. E., District Engineer for the First District, New York, dwelt briefly on the comparisons of rail and water costs. At the conclusion of these interesting talks the meeting was adjourned at 11:15 P. M. The attendance was 95.

Colors of 27th Engineers Presented to United Engineering Society

At a ceremony held at the Engineering Societies Building on November 14, 1924, the colors of the 27th Regiment of Engineers, A. E. F., were presented to the United Engineering Society by the State of New York. Prominent engineers, officers of the Army, and representatives of the State were in attendance.

After an introductory speech by Mr. Walter R. Ingalls, an address was delivered by Col. O. B. Perry, who commanded the regiment during its service in France. The regiment was composed of miners and mining engineers from all parts of the country, as well as a number of men without mining experience, who were familiar with other lines of engineering work. The officers were

drawn from members of the American Institute of Mining and Metallurgical Engineers.

The mining or dugout work was done by A Company on the Toul Sector and by C Company on the Vesle Sector. Other activities of the regiment included road-building, quarry work, water-supply work, light railway construction and maintenance, and bridge-building operations in which it reached its greatest efficiency. The men were kept continuously in the field in the Advance Zone during the entire period of the Argonne-Meuse Offensive. Most of the bridges were constructed under pressure, requiring day and night work.

The colors were formally accepted by W. L. Saunders, President of the United Engineering Society. Col. W. B. Ladue, Corps of Engineers, U. S. A., Engineer Officer of the Second Corps Area, representing Maj.-Gen. R. L. Bullard, U. S. A., spoke on preparedness from an engineering standpoint.

The colors have been placed on the first floor of the Engineering Societies Building, in a case on which the regiment's war record is inscribed.

New Honorary Member

At its meeting of December 1, 1924, the Board of Direction added another name to the list of Honorary Members of the Society, that of Herbert Hoover, M. Am. Soc. C. E.

The following brief sketch of Mr. Hoover's life is presented for the information of the membership:

HERBERT HOOVER

Herbert Hoover, M. Am. Soc. C. E., was born at West Branch, Iowa, on August 10, 1874. In 1885, he moved to Oregon where he worked in the office of the Oregon Land Company and attended night school. He eventually entered Leland Stanford, Jr., University, from which he was graduated in 1895 with the degree of Bachelor of Arts (in Mining Engineering). Thereafter, until 1913, Mr. Hoover was engaged professionally in mining and other engineering work. During 1895, he was with the United States Geological Survey of the Sierra Nevada Range and, later, was Manager and Consulting Engineer of various mining properties and railways in the United States, Mexico, Alaska, Canada, Australia, Italy, Great Britain, South Africa, Russia, China, and India.

Throughout the period of the World War, Mr. Hoover's services were in demand in urgent war organization. Among the more prominent organizations which he founded and directed were the American Relief Committee; the Commission for Relief in Belgium; U. S. Food Administration; U. S. Grain Corporation; Sugar Equalization Board; Inter-allied Food Council; European Coal Council; Supreme Economic Council; and the American Relief Administration. He served as a member of the President's War Council and the War Trade Council, and of the Second Industrial Conference.

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During the terms of the late President Harding and of President Coolidge, Mr. Hoover has been Secretary of Commerce. In addition, he served as Chairman of the President's Conference on Unemployment in September, 1921; as a Member of the Advisory Committee for the Limitation of Armaments Conference in 1921; and as Chairman of the Colorado River Commission, the St. Lawrence Waterway Commission, and the Northeastern Super-Power Committee.

Mr. Hoover's writings include, "Principles of Mining" (1909); "American Individualism" (1921), and many technical papers and discussions. He has also translated, jointly with Mrs. Hoover, Agricola's famous "De Re Metallica" (1912).

He has received many honorary degrees in both Engineering and Law from a number of American and foreign universities, and has been awarded various prizes, medals, and honors, for engineering and administrative welfare work.

Mr. Hoover is a Past-President and Honorary Member of the American Institute of Mining and Metallurgical Engineers; Medallist of the Mining and Metallurgical Society of America; and a member of the Société Ingénieurs Civils de France, Western Society of Engineers, National Institute of Social Sciences, etc. He also served as President of the Federated American Engineering Societies in 1921. His clubs include the University, Lawyer's (New York, N. Y.), Pacific Union, Bohemian (San Francisco, Calif.), and the Metropolitan and Cosmos (Washington, D. C.).

Research Narratives

That research has a romantic, a popular appeal, is illustrated by the wide demand for the little booklet of fifty 5-min. stories entitled Research Narratives. In this volume may be found the story of American glass, of bakelite, of velox, of titanium, of how manganese steel was discovered, of what a significant contribution to telephony was made by a Serbian herdsman, and of what the teredo suggests to engineers about tunnels. These and many other fascinating incidents are related in this interesting publication compiled and distributed by Engineering Foundation, 29 West 39th St., New York, N. Y., at price of 50 cents per copy, postpaid.

Conference on Simplification of Sheet Steel Sizes

By invitation of the United States Department of Commerce, President Grunsky appointed Fred T. Llewellyn, M. Am. Soc. C. E., to represent the Society at a conference of manufacturers, distributors, and users of sheet steel, held at Atlantic City, N. J., October 14, 1924, to consider recommendations for the simplification of sheet steel sizes and of eaves trough and conductor pipe.

The simplified sizes there adopted are given herewith. It is the belief that it will be to the advantage of members of the Society to follow these lists in the preparation of specifications.

SIMPLIFICATION OF SIZES FOR STEEL SHEETS

*Galvanized Flat Sheets**Gauge:*

12.....	.....	.....	.....	.....	.....	.....	28 by 120
14.....	.....	.....	.....	.....	.....	.....	28 by 120
16.....	24 by 96	.....	.....	.....	.....	.....	28 by 120
18.....	24 by 96	24 by 120	26 by 96	.....	.....	28 by 96	28 by 120
20.....	24 by 96	24 by 120	26 by 96	.....	.....	28 by 96	28 by 120
22.....	24 by 96	24 by 120	26 by 96	.....	.....	28 by 96	28 by 120
24.....	24 by 96	24 by 120	26 by 96	26 by 120	.....	28 by 96	28 by 120
26.....	24 by 96	24 by 120	26 by 96	26 by 120	28 by 84	28 by 96	28 by 120
28.....	24 by 96	24 by 120	26 by 96	26 by 120	28 by 84	28 by 96	28 by 120
29.....	.....	24 by 120	26 by 96	26 by 120	28 by 84	28 by 96	28 by 120
30.....	24 by 96	.....	26 by 96	.....	.....	28 by 96	28 by 120

Gauge:

12.....	.....	.....	.....	.....	.....	48 by 96	48 by 120
14.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	48 by 96	48 by 120
16.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	48 by 96	48 by 120
18.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	.....	48 by 120
20.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	48 by 96	48 by 120
22.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	.....	.....
24.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	.....	.....
26.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	.....	.....
28.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	.....	.....
29.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	.....	.....
30.....	30 by 96	30 by 120	36 by 96	.....	.....	.....	.....

*One-Pass, Cold-Rolled, Box-Annealed Sheets**Gauge:*

16.....	.....	.....	.....	.....	.....	28 by 96	.....
18.....	24 by 96	.....	.....	.....	.....	28 by 96	28 by 108
20.....	24 by 96	.....	.....	.....	.....	28 by 96	28 by 108
22.....	24 by 96	.....	.....	.....	.....	28 by 96	28 by 108
24.....	24 by 96	24 by 101	.....	.....	.....	28 by 96	28 by 108
26.....	24 by 96	24 by 101	.....	.....	.....	.....	.....
28.....	24 by 96	24 by 101	.....	.....	.....	.....	.....
29.....	.....	24 by 101	.....	.....	.....	.....	.....
30.....	.....	.....	.....	.....	.....	.....	.....

Gauge:

16.....	.....	.....	.....	.....	.....	.....	.....
18.....	30 by 96	.....	36 by 96	.....	.....	.....	.....
20.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	48 by 120	.....
22.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	48 by 120	.....
24.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	.....	.....
26.....	30 by 96	30 by 120	36 by 96	36 by 120	.....	.....	.....
28.....	30 by 96	.....	36 by 96	.....	.....	.....	.....
29.....	30 by 96	30 by 120	36 by 96	.....	.....	.....	.....
30.....	30 by 96	.....	.....	.....	.....	.....	.....

*Blue Annealed Sheets**Gauge:*

8.....	.....	.....	.....	.....	.....	.....	.....
10.....	24 by 96	.....	.....	.....	.....	.....	.....
12.....	24 by 96	.....	.....	.....	.....	.....	.....

Gauge: *Blue Annealed Sheets—(Continued)*

14.....	24 by 96	.....	.....	.....	.....	.....	.....	.....	.....
16.....	24 by 96	.....	.....	.....	.....	.....	.....	.....	.....
10.....	42 by 96	48 by 96	72 by 96	72 by 120	72 by 144	72 by 156	.....	.....	.....
12.....	42 by 96	48 by 96	.....	.....	.....	.....	.....	.....	.....
14.....	42 by 96	48 by 96	.....	.....	.....	.....	.....	.....	.....
16.....	42 by 96	48 by 96	.....	.....	.....	.....	.....	.....	.....

Gauge:

8.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10.....	30 by 96	30 by 120	36 by 96	36 by 120	36 by 144	48 by 120	36 by 168	.....	.....
12.....	30 by 96	30 by 120	36 by 96	36 by 120	36 by 144	48 by 120	.....	.....	.....
14.....	30 by 96	30 by 120	36 by 96	36 by 120	36 by 144	48 by 120	.....	.....	.....
16.....	30 by 96	30 by 120	36 by 96	36 by 120	36 by 144	48 by 120	.....	.....	.....
10.....	.....	60 by 96	60 by 120	.....	48 by 144	60 by 144	.....	.....	.....
12.....	42 by 120	60 by 96	60 by 120	.....	48 by 144	60 by 144	.....	.....	.....
14.....	42 by 120	.....	.....	.....	48 by 144	.....	.....	.....	.....
16.....	42 by 120	.....	.....	.....	48 by 144	.....	.....	.....	.....

Gauge:

8.....	.....	48 by 240	60 by 240	.....	.....	.....	.....	.....	.....
10.....	.....	48 by 156	60 by 156	.....	.....	.....	.....	.....	.....
14.....	.....	.....	60 by 120	.....	.....	.....	.....	.....	.....

Corrugated Roofing and Siding

Galvanized.—Present standard widths and corrugations: In even foot lengths, 5 ft. 0 in. to 12 ft. 0 in., in 28 gauge and heavier, even gauges.

Painted.—Present standard widths and corrugations: In even foot lengths, 5 ft. 0 in. to 12 ft. 0 in., in 28 gauge and heavier, even gauges.

Roofing (All Other Styles and Patterns)

Galvanized.—Present standard styles and patterns in 28 gauge and heavier even gauges.

Painted.—Present standard styles and patterns in 28 gauge and heavier, even gauges.

SIMPLIFIED PRACTICE RECOMMENDATION ON EAVES TROUGH, AND CONDUCTOR PIPE

Plain round conductor pipe.....2 in., 3 in., 4 in., 5 in., and 6 in.

Round corrugated conductor pipe..2 in., 3 in., 4 in., 5 in., and 6 in.

Square corrugated conductor pipe..2 in., 3 in., 4 in., and 5 in.

Eaves trough3½ in., 4 in., 5 in., 6 in., 7 in., and 8 in.

Conductor pipe elbows.....No. 1, 45°; No. 2, 60°; No. 3, 75°; No. 4, 90°.

1.—Along with the elimination of these sizes of conductor pipe and eaves trough goes also that of the fittings formerly used therewith.

2.—No eaves trough or conductor pipe is to be made lighter than 28-gauge, full weight; 27-gauge is to be eliminated.

3.—All elbows, shoes, miters, and all accessories, including ridge rolls, valleys, gutters, etc., are to be of 28-gauge, full weight.

4.—All eaves trough, conductor pipe, shoes, miters, and all accessories, including gutters, valleys, ridge rolls, etc., when made of copper, are to be not lighter than 16 oz.

Society Representatives

The following have been appointed to represent the Society in various capacities:

Sectional Committee on Tubular Steel Poles, Fred T. Llewellyn, M. Am. Soc. C. E.

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American Engineering Standards Committee, H. H. Quimby, M. Am. Soc. C. E. (re-appointment).

Executive Committee, American Engineering Standards Committee, Charles A. Mead, M. Am. Soc. C. E.

Committee to Prepare Safety Code on Automobile Brakes and Brake Testing (Sponsored by Bureau of Standards and American Automobile Association at the request of the American Engineering Standards Committee), C. B. Hunt, M. Am. Soc. C. E.

Board of Trustees, United Engineering Society, W. J. Wilgus, M. Am. Soc. C. E. (re-appointment).

American Marine Standards Committee, Division of Simplified Practice, William Bowie, M. Am. Soc. C. E.; L. O. Colbert, M. Am. Soc. C. E. (alternate).

National Conference on Street and Highway Safety, Charles D. Curtiss, M. Am. Soc. C. E.

Centenary of Portland Cement

In celebrating the centennial of the invention of Portland cement, in Chicago, Ill., on November 19, 1924, representatives of technical societies as well as a number of European guests joined with members of the Portland Cement Association in paying honor to the memory of Joseph Aspdin for his discovery and first patent on that important building material. Representatives of seven engineering and architectural societies were included on the program. The addresses stressed the part that concrete had played in the development of their respective fields.

The Society was represented by Past-President A. N. Talbot, who led the program of visiting speakers. Other addresses were given by H. R. Safford, M. Am. Soc. C. E., Vice-President of the Chicago, Burlington and Quincy Railroad Company, representing the American Railway Engineering Association; Charles E. Fox, of the American Institute of Architects; P. H. Bates, of the U. S. Bureau of Standards; Richard L. Humphrey, M. Am. Soc. C. E., of the American Society for Testing Materials; A. E. Lindau, Assoc. M. Am. Soc. C. E., of the American Concrete Institute; and Edward N. Hines, representing the road builders and highway officials.

Mr. F. W. Kelley, the retiring President of the Portland Cement Association, in speaking of the centennial, mentioned the debt of gratitude owed to Joseph Aspdin. In referring to the present development of the industry, he said:

"We who are privileged to make and use this wonderful material, have a duty to perform for ourselves and for posterity, in continuing unabated our efforts to apply all the resources of modern knowledge to perfect the making and use of our product."

Fifteen representatives of the cement industry in Europe also were present and took part in the program. The countries represented were Belgium, Denmark, France, Germany, Great Britain, and Norway.

Although the actual centennial took place on October 21, 1924, the celebration was postponed from that date until November 19, on account of the

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earlier celebration in England when representatives of the American manufacturers presented to the City of Leeds, the birthplace of Joseph Aspdin, a bronze memorial tablet that credited him with "making the whole world his debtor".

Engineering Standards Available

The American Engineering Standards Committee has issued a great many engineering standards in co-operation with various National engineering societies. It has available at present the following of especial interest to civil engineers: A 1-1922, Specifications and Tests for Portland Cement; A 2-1919, Specifications for Fire Tests of Materials and Construction; A 5-1921, Test for Toughness of Rock; A 6-1922, Specifications for Drain-Tile; A 7-1921, Method of Distillation of Bituminous Materials Suitable for Road Treatment; A 8-1922, Method of Test for Penetration of Bituminous Materials; A 11-1921, Code of Lighting Factories, Mills, and Other Work Places; A 18-1923, Method of Test for Unit Weight of Aggregates for Concrete; A 19-1923, Method of Test for Voids in Fine Aggregate for Concrete; A 20-1923, Method of Test for Organic Impurities in Sands for Concrete; A 26-1924, Stone, Slag, Gravel, Sand, and Stone Block Sampling; A 27-1924, Test for Apparent Specific Gravity of Coarse Aggregates; A 31-1924, Cement Grout Filler for Brick and Stone Pavements; and A 32-1924, Specifications for Block for Granite Block Pavements.

Copies of any of these Standards may be obtained from the American Engineering Standards Committee, 29 West 39th St., New York, N. Y., at a cost of 25 cents.

New Officers of American Society of Mechanical Engineers

At the Annual Meeting of the American Society of Mechanical Engineers, December 1-5, 1924, the following newly elected officers of that Society assumed their duties: William D. Durand, Professor Emeritus of Leland Stanford, Jr., University, Stanford University, Calif., as President; Messrs. Robert W. Angus, of Toronto, Ont., Canada, S. F. Jeter, of Hartford, Conn., and Thomas L. Wilkinson, of Davenport, Iowa, as Vice-Presidents; and Messrs. J. H. Lawrence, of New York, N. Y., E. A. Muller, of Cincinnati, Ohio, and Paul Wright, of Birmingham, Ala., as Managers.

New Chief Engineer of New York-New Jersey Tunnel Commission

A successor to the late Clifford M. Holland, M. Am. Soc. C. E., in charge of the engineering work for the new vehicular tunnel between New York and New Jersey, has recently been appointed in the person of Milton H. Freeman, M. Am. Soc. C. E. For the last twenty years Mr. Freeman has been identified with construction work in the vicinity of New York, including the Pennsylvania Tunnels, the Catskill Aqueduct, the rapid transit tunnels, and the new vehicular tunnel, of which he has been Engineer of Construction. The present promotion of Mr. Freeman is an appreciation of his wide experience, his ability, and his intimacy with the New York-New Jersey tunnel work.

Personnel Research Federation

Present efforts to study the human factor and to promote happiness, efficiency and productivity among workers, are of great significance to all engineers. Special investigations toward these ends are being organized by the Personnel Research Federation under the auspices of Engineering Foundation and the National Research Council.

The applications of scientific principles to the conduct of any engineer in relation to his fellows has widespread possibilities. In civil engineering work this is apparent where large bodies of men are employed, as in engineering offices or on construction projects. Members, therefore, may follow with interest the developments of this work and study to advantage the results as they are announced.

In charge of this research the Federation has appointed as Director, Dr. W. V. Bingham, who for many years has specialized in psychology. Besides his teaching and administrative work at Carnegie Institute of Technology, Dr. Bingham had experience as a Lieutenant-Colonel in the Personnel Branch of the General Staff, U. S. Army, during the World War.

Many agencies are co-operating in this work—labor organizations, Government offices, welfare bureaus, and educational institutions. Under such favorable auspices a happy issue of the investigations may be expected, which will reflect credit on the Engineering Profession through the agency of Engineering Foundation. Members are invited to bring to this organization their suggestions or appeals for help in planning or carrying out researches in the personnel field. Address the Personnel Research Federation, 29 West 39th Street, New York, N. Y.

Work of Soils Committee

A meeting of the Special Committee to Codify Present Practice on the Bearing Value of Soils for Foundations, etc., was held at the Headquarters of the Society on October 20, 1924. Mr. C. von Caldenius, who was present as a guest, reviewed the work of the Swedish Geotechnical Commission. Mr. Caldenius is a consulting geologist of Appelviken, Sweden, to whom the Royal Board of Trade, Stockholm, has awarded a traveling scholarship for the study of the work of the Society's Soils Committee and kindred investigations. Researches made by a member of the Committee in literature on piles and pile-driving in connection with foundation soils were described, as well as an interesting and valuable undertaking in connection with clay embankments. It was recommended that arrangements be made for conducting tests of penetration and elastic behavior.

It is expected that information on colloid investigations of the U. S. Bureau of Soils will be contributed to the work of the Committee, and that A. T. Goldbeck, Assoc. M. Am. Soc. C. E., of the U. S. Bureau of Public Roads, will publish the results of some important investigations that are closely related.

Carnot Centenary

One hundred years ago Nicholas Leonard Sadi Carnot, an eminent French scientist, enunciated principles which are considered fundamental to-day—known as the Second Law of Thermodynamics and the Carnot Cycle. In commemoration of this noteworthy event, a meeting was held in the Engineering Societies' Building on the evening of December 4, 1924, at which a large number of engineers paid their respects to Carnot and his work.

The meeting was under the auspices of Engineering Foundation, in co-operation with many universities, technical schools, and scientific societies, including this Society. Dr. William F. Durand, recently elected President of the American Society of Mechanical Engineers, presided. M. Paul Gripon, French Naval Attaché, spoke for Ambassador Jusserand, and M. J. J. Chanpenois, Director in the United States of the National Bureau of French Universities, read a letter of appreciation from Professor Charles Fabry, of the University of Paris.

The principal addresses were by Professor Michael I. Pupin, of Columbia University, who discussed in an intimate manner some of the broader aspects of Carnot's work, and by Dr. W. L. R. Emmett, of the General Electric Company, who described the material application of the theory in the development of power generators. Both speakers stressed the significance and the increasing importance of Carnot's epochal discovery.

Death of Sir Maurice Fitzmaurice, Hon. M. Am. Soc. C. E.

From London, England, comes news of the death on November 17, 1924, of Sir Maurice Fitzmaurice, Hon. M. Am. Soc. C. E., noted throughout the world for achievements in engineering construction. He was 63 years of age. One of his important works, in connection with which he gained enviable notoriety, was the Assuan Dam across the Nile. Sir Maurice had charge of this work when he was still a comparatively young man. Much of his experience was in connection with transportation; he worked on the Forth Bridge, on railways and docks in Canada, and on the Blackwell Tunnel in London. At the age of 40, and thereafter for eleven years, he was Chief Engineer to the London County Council. At the conclusion of this important work, he entered the firm of Coode, Fitzmaurice, Wilson, and Mitchell, which had charge of harbor works of magnitude throughout the Kingdom. During the World War, Sir Maurice held important posts involving official engineering duties. He was knighted in 1912; he was President of the Institution of Civil Engineers in 1916-17; and he was elected an Honorary Member of this Society in 1922. To few engineers come so many, or such well merited, honors as to Sir Maurice Fitzmaurice.

Local Sections*

Louisiana.—October 29, 1924. A business meeting was held at which a Branch Employment Bureau was discussed. A committee was appointed to draft resolutions on the death of Secretary Dunlap. Attendance 8.

New York.—November 19, 1924. An informal dinner was held at which 100 members and guests were present. The dinner was followed by a Joint Meeting of the Section with the New York Metropolitan Section of the American Society of Mechanical Engineers. "New York City Traffic Problems" was the subject discussed. Papers were presented by the Hon. John F. Hylan, Mayor of New York City; John Kenlon, Chief of New York City Fire Department; Elihu C. Church, Transportation Engineer of the Port of New York Authority; and C. G. Young, Secretary to the New York City Police Commissioner. Mr. M. W. Weir presented a paper by Charles W. Leavitt, Consulting Civil and Landscape Engineer. The papers were followed by discussion. Attendance 630.

Northeastern.—October 10, 1924. The occasion for this meeting was to welcome President C. E. Grunsky who addressed the Section on a number of topics of vital interest to engineers. This address received hearty and sincere applause. Attendance about 75.

Sacramento.—November 18, 1924. Edward Hyatt, Jr., Chief of the Division of Water Rights, State Department of Public Works of California, addressed the Section on "The Sacramento River and the Work Done by the Division of Water Rights in Supervising the Distribution of Water for Irrigation." Attendance 24.

San Francisco.—October 18, 1924. Members of the Section and guests made an excursion to inspect the work on the Carquinez Bridge pier and the plant of the California-Hawaiian Sugar Refining Corporation at Crockett, Calif. Attendance 130.

October 21, 1924.—Joint meeting of the Section with the Student Chapters of the University of California and Stanford University. The dinner which preceded the meeting was attended by members, guests, and members of the Student Chapters. After the business meeting, the program of the evening was opened by President White who gave a short address, expressing the interest of the Section in the welfare of the Student Chapters. The remainder of the evening was devoted to entertainment in which members of the Section and of the Student Chapters participated. Attendance 158.

Student Chapters†

College of the City of New York.—October 24, 1924. The program for the ensuing term was formulated. The Chapter intends carrying out all theoretical work necessary for the building of a small suburban town at Van Cortlandt Park. Plans will be drawn for the construction of imaginary streets, lighting,

* For list of Local Sections, Officers, Rules, etc., see 1924 Year Book, p. 27.

† For list of Student Chapters, Officers, etc., see 1924 Year Book, p. 32.

sewage systems and parks. Work has been started on the formation of a library of blue prints for the use of students of engineering. There are 30 members in the Chapter.

University of Nebraska. A membership drive has given the Nebraska Chapter a flying start with an enrollment of 75. Two-thirds of the members of the Chapter attended an Am. Soc. C. E. breakfast, which proved a pleasant social preliminary to coming activities for old and new members. Two regular meetings have been held, and a talk was given by Professor Mickey, who showed motion pictures of various engineering projects he visited during the summer.

Carnegie Institute of Technology.—A full and successful program was completed during the year 1923-24. Exceptionally worth while addresses by engineers of note were given at a number of the meetings. Papers were given by students at other weekly meetings, the average student attendance being 53.

The special addresses during the year were:

- September 26, 1923, Mr. P. J. Freeman, Univ. of Illinois, "The Work of a Commercial Testing and Inspection Bureau."
- October 3, 1923, William M. Venable, M. Am. Soc. C. E., "Construction of Long Key Viaduct of Florida East Coast Railroad."
- October 10, 1923, B. F. Hastings, M. Am. Soc. C. E., "Special Foundations and Substructures."
- October 17, 1923, C. S. Davis, M. Am. Soc. C. E., "Field and Office Work in Connection with the Valuation of Railroads."
- October 31, 1923, William A. Weldin, M. Am. Soc. C. E., "Opening of a Coal Mine."
- November 7, 1923, E. E. Bankson, Assoc. M. Am. Soc. C. E., "Public Utility Valuation and Rate Making."
- November 14, 1923, M. R. Schaffr, M. Am. Soc. C. E., "The Recent Zoning Ordinance of Pittsburgh."
- November 21, 1923, H. A. Thomas, M. Am. Soc. C. E., "Slide Rules."
- November 28, 1923, Charles D. McArthur, Assoc. M. Am. Soc. C. E., "Hard Rock Tunnels."
- December 5, 1923, W. C. Hawley, M. Am. Soc. C. E., "Some Engineering Problems of Water-Works Management."
- December 12, 1923, C. W. Beck, Assoc. M. Am. Soc. C. E., "Installation of a Turntable under Traffic at Conway Yards of P. R. R."
- January 9, 1924, C. D. Loveland, Assoc. M. Am. Soc. C. E., "Truscon Standard Buildings."
- January 21, 1924, H. C. Lyons, Captain, Corps of Engrs., U. S. A., Assoc. M. Am. Soc. C. E., "Military Maps and Mapping."
- January 28, 1924, L. M. Siegel, President and General Manager of L. M. Siegel Company, "Human Side of Engineering."
- March 5, 1924, W. D. Wiggins, M. Am. Soc. C. E., "Slide of the Bigelow Boulevard."
- March 12, 1924, G. S. Davison, M. Am. Soc. C. E., "The Railroad Situation."
- March 26, 1924, John M. Rice, M. Am. Soc. C. E., "Modern Water Filtration Plants."

Engineering Societies Library

The services of the Engineering Societies Library are available to all members who wish searches, copies, translations, etc., or advice on technical literature. A collection of modern books is also available for loan to members in North America, at moderate rentals. Correspondence should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of work. A more comprehensive statement in regard to this matter will be found on pages 49 and 50 of the Year Book for 1924.

Book Notices*

(November 1 to November 29, 1924)

A. S. T. M. Tentative Standards, 1924. Phila., American Society for Testing Materials, 1924. 763 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$8.00, cloth; \$7.00, paper.

"Tentative Standards" are those printed by the American Society for Testing Materials to elicit criticism, before they are finally revised and recommended for adoption as "Standards". The 1924 edition covers a great variety of materials, such as metals, cement and clay products, preservative coatings, lubricants, road materials, fuels, timber, insulating materials, boxes, textile materials, rubber products, etc.

Accounting and Business Methods for Contractors. By Charles F. Dingman. N. Y., McGraw-Hill Book Co., 1924. 175 pp., 7 x 4 in., fabrikoid. \$2.50.

This elementary treatise on accounting is a companion to "Estimating Building Costs" and "Plan Reading and Quantity Surveying". It treats of cost finding, cost keeping, accounting, purchasing, and insurance. Besides presenting the principles concisely, it shows their application.

Applied Elasticity. By John Prescott. Lond. and N. Y., Longmans, Green & Co., 1924. 666 pp., 9 x 6 in., cloth. \$8.00.

The author approaches the theory of elasticity from the point of view of the engineer rather than that of the mathematician. Hence, only problems of practical interest have been chosen to illustrate the theory. The methods for the deflection of a thin plate under normal pressure when the stretching of the middle surface is considered, an approximate method for the buckling loads of deep beams, and a method for the vibrations of a disk of variable thinness, are said to be here given for the first time.

Appraisal of Real Estate. By Frederick M. Babcock. N. Y., Macmillan Co., 1924. 380 pp., illus., tab., 8 x 5 in., cloth. \$3.50.

In this volume the author endeavors to develop a set of principles and to show how these are applied. The appraisals of income, residential, and farm properties are discussed in detail. There are also chapters on lease equities, depreciation, and obsolescence.

Beton-Kalender, 1925, Herausgegeben von der Zeitschrift, "Beton und Eisen". Berlin, Wilhelm Ernst u. Sohn, 1924. 2 v., illus., diagrams, tab., 7 x 4 in.; v. 1, cloth; v. 2, paper. \$1.75.

The Nineteenth Issue of this German pocket-book on concrete construction contains in Vol. 1, which is bound, the necessary mathematical tables, articles on the strength of concrete, on building materials, statics of structures, design, standard specifications, etc.; Vol. 2, in paper covers, is devoted to practical methods of building, and to detailed design of floors, columns, stairways, bridges, tanks, walls, etc.

Chapter in American Education; Rensselaer Polytechnic, 1824-1924. By Ray Palmer Baker. N. Y., Charles Scribner's Sons, 1924. 170 pp., 8 x 5 in., cloth. \$1.00.

* The statements made in these notices are taken from the books themselves, and this Society is not responsible for them. Unless otherwise specified, the books in this list have been donated by publishers.

This brief account of the main points in the development of Rensselaer Polytechnic Institute, during its hundred years of existence, describes the National significance of its pioneer work and its influence on the development of scientific education and research in America.

Constituents of Coal Tar. By Percy Edwin Spielmann. (Monographs on Industrial Chemistry.) Lond. and N. Y., Longmans, Green & Co., 1924. 219 pp., graph, tab., 9 x 5 in., cloth. \$4.25.

This collection of information on the individual constituents of coal tar, is intended for the coal-tar chemist as a reference handbook, not as an introduction to the subject. It contains a bibliography of more than five hundred references.

Corrosion of Metals. By Ulick R. Evans. N. Y., Longmans, Green & Co., 1924. 212 pp., illus., 9 x 6 in., cloth. \$5.00.

The author relates what is known about corrosion and studies the underlying mechanism of the changes that occur. His intention is to help students, engineers, and chemists in search of scientific principles by which to interpret their experience.

Distillation du Bois. By G. Dupont. Paris, Gauthier-Villars et Cie., 1924. 284 pp., illus., tab., 8 x 5 in., paper. 25 francs.

This book is designed to give engineers and chemists a brief theoretical and practical account of wood distillation. The first section is devoted to actual distillation in theory and practice; the second section discusses the principal uses of the products of distillation.

John A. Brashear: Autobiography. Edited by W. Lucien Scaife. N. Y., American Society of Mechanical Engineers, 1924. 262 pp., illus., port., 9 x 6 in., cloth. \$4.25.

The autobiography of a man without formal education who started life as a journeyman machinist and became, through his great mechanical skill, and his interest in astronomy, the foremost maker of astronomical lenses of his time, is told in interesting, graphic language. Dr. Brashear's later career as a manufacturer, as an educator, and as a man of public affairs, is supplemented by letters that continue the story to the time of his death in 1920.

Lehrbuch der Nomographie. By H. Schwerdt. Berlin, Julius Springer, 1924. 267 pp., diagrams, 8 x 6 in., boards. 12, 90 gm.

This complete textbook aims primarily to introduce the student to practice in nomographic problems. It develops the fundamental principles so that they may be applied and illustrates them by detailed application to important cases.

Measurement of Fluid Velocity and Pressure. By J. R. Pannell. Edited by R. A. Frazer. Lond., Edward Arnold & Co., 1924. 135 pp., illus., diagrams, 9 x 6 in., cloth. \$3.50. (Gift of Longmans, Green & Co.)

The author, a victim of the ill-fated British airship, R-38, devoted his leisure for many years to aerodynamic research. He treats of the various types of instruments, pressure-tube, moving-part, and hot-wire anemometers, direction and velocity meters, ship-logs, and manometers for measuring the velocity and pressure of fluids, and also the laws governing the flow of fluids in circular pipes.

Public Water Supplies. By F. E. Turneaure and H. L. Russell. Third Edition. N. Y., John Wiley & Sons, 1924. 766 pp., illus., diagrams, tab., 9 x 6 in., cloth. \$6.00.

This latest edition includes a large amount of new information collected during the past sixteen years. This applies especially to the sections on the consumption of water, stream flow, filtration, chlorination, quality of water supplies, concrete in water-works construction, pumping machinery, and engineering literature.

Structural Engineering Strength of Materials. By George F. Swain. N. Y., McGraw-Hill Book Co., 1924. 569 pp., illus., diagrams, 9 x 6 in., cloth. \$5.00.

This volume is the first of a series of four on the theory and design of structures, based on the authors' extensive teaching experience, giving a lucid discussion of the fundamental principles of the strength of materials applicable to the design of concrete, and framed structures. It occupies a middle ground between the brief textbooks and the encyclopedic works of reference.

Current Civil Engineering Literature

Key to Abbreviated References to Publications Indexed*

Abbreviated References.	Publication.	Place.
Am. C. Inst.....	American Concrete Institute, Proceedings (Y.)	
A. I. E. E.....	American Institute of Electrical Engineers Journal (M.)	Detroit
A. R. E. A.....	American Railway Engineering Association, Proceedings (Y.)	New York
A. S. T. M.....	American Society for Testing Materials, Proceedings (Y.)	Chicago
Am. Soc. C. E.....	American Society of Civil Engineers, Proceedings (M.)	Philadelphia
Am. Soc. Mun. Impvts.....	American Society for Municipal Improvements, Proceedings (Y.)	New York
Am. W. W. Assoc.....	American Waterworks Association, Journal (Bi-M.)	New York
Am. Wood Prs. Assoc.....	American Wood Preservers Association, Proceedings (Y.)	Baltimore
Ann. P. et C.....	Annales des Ponts et Chaussées (Bi-M.)	Chicago
Ann. T. P. Belg.....	Annales des Travaux Publics de Belgique (Bi-M.)	Paris
Assoc. Ing. Gand.....	Annales de l'Association des Ingénieurs sortis des Ecoles Spéciales de Gand (Q.)	Brussels
Bost. Soc. C. E.....	Boston Society of Civil Engineers, Journal (M.)	Ghent
Can. Engr.....	Canadian Engineer (W.)	Boston
Cem. Eng.....	Cement and Engineering News (M.)	Toronto
Cornell C. E.....	Cornell Civil Engineer (M.)	Chicago
Dock & Harbour.....	Dock and Harbour Authority (M.)	Ithaca
Eng.....	Engineering (W.)	London
Eng. & Contr.....	Engineering and Contracting (W.)	London
Eng. Inst. Can.....	Engineering Institute of Canada, Journal (M.)	Montreal
Eng. N. R.....	Engineering News-Record (W.)	Montreal
Engrs. Soc. Pa.....	Engineers' Society of Pennsylvania, Journal (M.)	New York
Engrs. Soc. W. Pa.....	Engineers' Society of Western Pennsylvania, Journal (M.)	Harrisburg
Engr.....	Engineer (W.)	Pittsburgh
Engrs. & Eng.....	Engineers and Engineering, Engineers' Club of Philadelphia (M.)	London
Gen. Civ.....	Le Génie Civil (W.)	Philadelphia
Gesund. Ing.....	Gesundheits Ingenieur (W.)	Paris
Inst. C. E.....	Institution of Civil Engineers Minutes of Proceedings (Q.)	Munich
Inst. Mun. & Co. Engrs.....	Institution of Municipal and County Engineers, Journal (W.)	London
Int. Ry. Cong. Assoc.....	International Railway Congress Association, Bulletin (M.)	London
Land. Arch.....	Landscape Architecture (M.)	Brussels
Mech. Eng.....	Mechanical Engineering (M.)	Harrisburg
Mil. Engr.....	Society of Mechanical Engineers	Philadelphia
Min. & Metal.....	Military Engineer (M.)	Washington
Mun. & Co. Eng.....	Mining and Metallurgy (M.)	New York
N. E. W. W. Assoc.....	American Institute of Mining Engineers	Indianapolis
N. Y. R. R. Club.....	New England Water Works Association, Journal (M.)	Boston
Oest. Ing. Arch. Ver.....	New York Railroad Club, Proceedings (M.)	Brooklyn
Power.....	Oesterreichischer Ingenieur und Architekten Verein, Zeitschrift (F.)	Vienna
Rev. Gen.....	Power (W.)	New York
Ry. Age.....	Revue Générale des Chemins de Fer (M.)	Paris
Ry. Eng. & Maint.....	Railway Age (W.)	New York
Ry. Rev.....	Railway Engineering and Maintenance (M.)	Chicago
Schw. Bauz.....	Railway Review (W.)	Chicago
Scl. Am.....	Railway Review (W.)	Zurich
Soc. Ing. Civ. Fr.....	Schweizerische Bauzeitung (W.)	New York
Ver. deu. Ing.....	Société des Ingénieurs Civils de France, Mémoires et Comptes Rendus (Q.)	Paris
West. Ry. Club.....	Verein deutscher Ingenieure, Zeitschrift (W.)	Berlin
West. Soc. Engrs.....	Western Railway Club, Proceedings (M.)	Chicago
Zeit. Bau.....	Western Society of Engineers, Journal (M.)	Chicago
Z. d. Bauver.....	Zeitschrift für Bauwesen (Q.)	Berlin
	Zentralblatt der Bauverwaltung (W.)	Berlin

* Y = Yearly ; Q = Quarterly ; M = Monthly ; F = Fortnightly ; W = Weekly.

1. Proc. Automat. J. Sc.
2. Phys. A Meth. Mainten. Nov.
3. Indu. Hydro. Redevel. Nov. Tuyaux Pipin. Die Pro. New Ueber Turin. Water
- Labora.
- Recent Schwinn. Fopp.
- Effect Eng.
- Abstra.
1. Of Régies Rule.
2. Of Report Ry. Concer.
- Hollow Winter
- Pile 13.
- Novel Conc. Drivin. Work
- Asphal. Th.
- Ohio Build. No. Reinf. En. L'exp. Qua. Ju. Les Prof. (E. Ar)

B. Applied Mechanics

b. Hydraulics

1. Processes of Measurement

Automatischer Wassermengenschreiber.* (Automatic Recorder for Quantity of Water.) J. Schenker. Schw. Bauz. Oct. 25, '24.

2. Physical Hydraulics (Orifices, Pipes, Channels, Waves)

A Method for the Economic Design of Penstocks.* H. L. Doolittle. Mech. Eng. Nov., '24. Maintenance of Wood-Stave Pipe in Hydro-Electric Practice.* Byron E. White. Power Nov. 18, '24.

3. Industrial Hydraulics

Hydro Developments near Campbellford.* Can. Engr. Oct. 28, '24.

Redevelopment Improves Output of Low-Head Power Sites.* Henry W. Taylor. Eng. N. R. Nov. 6, '24.

Tuyaux en Béton Armé pour Conduites Forcées.* (Reinforced Concrete Pipes for Pressure Piping.) E. Monteux. Gen. Civ. Oct. 25, '24.

Die Propeller-Turbinen des neuen Elektrizitätswerkes Wynau.* (Propeller Turbines of the New Wynau Electric Station.) R. Hofmann. Schw. Bauz. Oct. 11, '24.

Ueber Bau und Abpressversuche der Druckleitung für die Wasserkraftanlage Venaus bei Turin.* (On the Construction and Pressure Tests of Pressure Piping for the Venaus Water Power Plant in Turin.) Thv. Heyerdahl. Schw. Bauz. Oct. 18, '24.

C. Materials of Construction and General Processes

a. Lime, Cement, Mortar, Concrete, Brick, Bitumen, etc.

Laboratory Tests on Novocrete.* Eng. & Contr. Oct. 22, '24.

b. Metals

Recent English Endurance Tests of Steel and Other Metals. Eng. N. R. Oct. 30, '24.

Schwingungsfestigkeit von Baustählen.* (Vibratory Strength of Structural Steels.) Otto Föppel. Schw. Bauz. Nov. 1, '24.

e. Earthwork. Cubage. Excavating Machinery

Effect of Length of Haul on Cost of Earthwork.* J. L. Harrison. (From Public Roads.) Eng. & Contr. Nov. 5, '24.

f. Rock Excavation, Mining, Rock Removal

Abstracts of Institute Papers. Min. & Metal. Nov., '24.

g. Execution of Works. Specifications

1. Of Masonry

Règles Scientifiques pour la Renforcement des Constructions en Maçonnerie. (Scientific Rules for Reinforcing Masonry Construction.) Charles Rabut. Gen. Civ. Oct. 25, '24.

2. Of Concrete.

Report on Placing Concrete in Winter. (Read before Am. Ry. Bridge & Bldg. Assoc.) Ry. Rev. Oct. 25, '24.

Concrete in Sea Water.* A. G. Tapley. Eng. Inst. Can. Nov., '24.

h. Foundations, Bridge Piers and Abutment

Hollow Concrete Bridge Piers Built Like Chimneys.* Eng. N. R. Nov. 6, '24.

Winter Reconstruction at the Spier Falls Power Plant.* C. Voetsch. Eng. N. R. Nov. 13, '24.

j. Piles and Pile-Driving

Pile Casting Methods for Concrete Pier at Havana.* John S. Vedoe. Eng. N. R. Nov. 13, '24.

k. Tunnels and Tunneling—Shield

Novel Plan for Estuary Tunnel at Oakland, Calif.* Eng. N. R. Oct. 30, '24.

Concrete Lining Methods in the Skagit Tunnel.* Eng. N. R. Oct. 30, '24.

Driving a Long Small-Section Wet Rock Tunnel.* Eng. N. R. Nov. 6, '24.

Work on Moffat Tunnel Now in Full Progress.* Ry. Age Nov. 15, '24.

D. Highways

c. Construction

Asphalt Surfacing of Old Macadam and Gravel in Ohio. H. S. Perry. (Paper read before Third Asphalt Pavement Conference.) Mun. & Co. Eng. Oct., '24.

Ohio and Pennsylvania Test Roads Emphasize Subgrade.* Eng. N. R. Oct. 30, '24.

Building a Cliff Road to the Bear Mountain Bridge.* John Mansfield Belknap. Eng. N. R. Nov. 6, '24.

Reinforcing and Subgrade Factors in Road Cracking. J. T. Pauls. (From Public Roads.) Eng. N. R. Nov. 6, '24.

L'exploitation des Carrières par le Service des Routes de la VII^e Armée.* (Operation of Quarries by the Road Service of the VII^e Army.) M. Verrière. Ann. P. et C. July-Aug., '24.

Les Revêtements de Routes en Laitier Goudronné.* (Road Covering of Tarred Scoria.) Piens. Ann. T. P. Belg. Oct., '24.

Profils en Travers des Chaussées. Essai sur la Détermination de Profils Rationnels Uniques.* (Road Profiles. Test on the Determination of the Only Rational Profiles.) Leon Moissenet. Ann. T. P. Belg. Oct., '24.

h. Vehicles. Automobiles. Traffic

Rules of the Road and How to Enforce Them to Increase Safety. T. H. Carrow. Mun. & Co. Eng. Oct., '24.
Zur Verkehrsregelung auf dem Potsdamer Platz in Berlin.* (Regulation of Traffic at the Potsdam Square in Berlin.) Z. d. Bauver. Oct. 29, '24.

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missi***E. Bridges, Viaducts, and Arches******b. Iron or Steel Bridges and Viaducts***

Gunite Protection for Steel Structures.* Peter Gillespie and P. J. Culliton. Can. Engr. Serial beginning Oct. 28, '24.
Closing 640-Ft. Michigan Central Arch Over Niagara Gorge.* Eng. N. R. Oct. 30, '24.
Remarkably Heavy Plate Girders in Skew Railroad Bridge.* Eng. N. R. Oct. 30, '24.
Union Pacific Completes Bridge Over Columbia River.* G. H. Trout. Ry. Eng. & Main. Nov. '24.
The Story of the Eads Bridge Over the Mississippi.* C. E. Smith. Ry. Eng. & Main. Nov., '24.
Fiftieth Anniversary of the Eads Bridge.* Charles E. Smith. (Paper read before Bridge & Bldg. Assoc.) Ry. Rev. Nov. 1, '24.
Eads Bridge Completes Fifty Years' Service.* C. E. Smith. (From paper read before Am. Ry. Bridge and Building Assoc.) Ry. Age Nov. 1, '24.
Skew Bridge for Fly-Over Junction at Chicago: I. C. R. R.* Eng. N. R. Nov. 6, '24.
New Niagara Gorge Arch Nearing Completion.* Ry. Age Nov. 8, '24.

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f. Suspension Bridges. Transfer Bridges

An Account of an Examination of the Menai Suspension Bridge. Henry Tudsbury Tudsbury and Alec Robert Gibbs. Inst. C. E. 1923-24, Pt. 1.
Design of the Florianopolis Suspension Bridge.* D. B. Steinman. Eng. N. R. Nov. 13, '24.

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Turn***g. Swing, Bascule, Lift, Floating, Oscillating Bridges, Travelling Cranes***

Limite Admissible pour la Charge de Rouleaux* en Contact avec des Chemins de Roulement Plans.* (Admissible Limit for the Load on Rollers in Contact with Straight Roller Ways.) Gen. Civ. Oct. 11, '24.

h. Computations, Tests, etc.

Calcul des Poutres à Consoles et Portiques Raidis par des Haubans.* (Calculation of Bracket Beams and Frames Braced by Guys.) G. Prudon. Gen. Civ. Oct. 4, '24.
Zwei Jahre Bau und Erhaltung städtischer brücken in Wien.* (Two Years of Building and Maintaining Municipal Bridges in Vienna.) F. Musil. Oest. Ing. Arch. Ver. Oct. 17, '24.

F. Inland Waters***c. Regulation of Waterways, Volumes of Discharge, Freshets, Floods, Soundings***

The Effect of Shape of Catchment on Flood-Discharge.* Gordon Risley Hearn. Inst. C. E. 1923-24.

Floods of the Damodar River, and Rainstorms Producing Them.* Ernest Leslie Glass. Inst. C. E. 1923-24, Pt. 1.

Discharge from Catchment-Areas in India, as Affecting the Waterways of Bridges.* George Ernest Lillie. Inst. C. E. 1923-24, Pt. 1.

Recent Developments in Methods of Computation of River Discharge.* C. H. Pierce. Cornell C. E. Oct., '24.

Flood and Flood Protection Projects at Wichita.* P. L. Brockway. Eng. N. R. Nov. 20, '24. Bodensee-Regulierung, Hochwasserschutz, Kraftnutzung und Schiffahrt.* (Regulation of Lake Constance, Protection from High Water, Utilization of Power and Navigation.)

Schw. Bauz. Serial beginning Oct. 11, '24.

Der Rückstau des Rheins auf Schweizergebiet bis zur Birsmündung, durch das Kraftwerk Kembs.* (Backing Up of the Rhine in Swiss Territory Up to the Mouth of the Birs, by the Kembs Power Plant.) Schw. Bauz. Serial beginning Oct. 18, '24.

d. Diverting Dams

Die Wasser- und Schiffsbewegungen beim Schleusenbetrieb mit langen und mit kurzen Umläufen.* (Movements of Water and Ships in Lock Operation in Cases of Long and Short Conduits.) R. Winkel. Z. d. Bauver. Serial beginning Sept. 24, '24.

La Rupture du Barrage à Voûtes Multiples sur le Gleno, Lombardie. Rapport Officiel des Experts.* (Failure of the Multiple Arch Dam on the Gleno in Lombardie.) Gen. Civ. Oct. 18, '24.

Calcul des Barrages en Arc; Influence des Variations de Température.* (Calculation on Arched Dams; Influence of Variations in Temperature.) Francis Carton. Gen. Civ. Oct. 25, '24.

k. Utilization of Inland Waterways, Freight, Capacity

River-and-Rail Freight Terminal at Memphis, Tenn.* George W. Foster. Eng. N. R. Oct. 30, '24.

3. Na
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Co***G. Maritime Works******a. Behavior of Movements of the Ocean***

The Tides from an Engineer's Standpoint.* Edward William Hollingworth. Inst. C. E. 1923-24, Pt. 1.

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b. Management and Protection of Coasts. Beaches. Dunes

The Effect of Groyning upon Some Parts of the English Coast. Richard Fuge Grantham, Inst. C. E.

c. Vessels and Maritime Navigation, etc.

Les Transmissions et les Embrayages pour la Commande des Machines Marines.* (Transmission and Clutches for the Control of Marine Engines.) Gen. Civ. Oct. 18, '24.

h. Wharves. Mooring Buoys. Harbor Equipment

Dock Extensions at Southampton.* Engr. Oct. 24, '24.

Modern Gas and Bell Buoy Built by Lighthouse Service.* Eng. N. R. Nov. 13, '24.

i. Harbors (General Articles)

The Port of Naples and Its Important Improvement Works.* Luigi Greco. Dock & Harbour Nov., '24.

Development of the Port of Montreal.* M. T. Sheehy-Casey. Can. Engr. Nov. 18, '24.

Zerstörung der Festung und des Hafens auf Helgoland.* (Destruction of the Fortifications and Harbor at Helgoland.) Nübling and Bareimann. Zeit. Bau. Serial beginning Pt. 7 (Ingenieurbauteil), '24.

j. Dockyard Machinery and Shipyards

Bulk-Handling Machinery at British and North American Ports.* George Bulkeley. (Paper read before Great Western Ry.) Dock & Harbour Nov., '24.

H. Railroads. Street and Interurban Railways. Automobiles. Aeronautics**a. Railroads****1. General Articles**

A Larger Program of Railroad Building.* C. S. Gzowski. Ry. Rev. Nov. 8, '24.

Die Eisenbahntechnische Tagung in Berlin. (The Railroad Technical Meeting in Berlin.) Z. d. Bauver. Oct. 29, '24.

4. Track

Report No. 1 On the Question of Breaking of Rails; Joints.* Int. Ry. Cong. Assoc. Oct., '24.

The Fire Hazard of Treated Timber. C. S. Heritage. Ry. Eng. & Main. Nov., '24.

Hump Yard Operates Without Car Riders.* Ry. Age Nov. 15, '24.

5. Signals and Safety Apparatus

Controlled Manual Block with Train Control.* Ry. Age Nov. 8, '24.

6. Rolling Stock (Locomotives, Cars)

Performance of Three-Cylinder Locomotive on Test Track.* Ry. Rev. Oct. 25, '24.

Illinois Central Improves Equipment for Burning Weeds with Oil.* C. R. Knowles. Ry. Eng. & Main. Nov., '24.

The Zoelly Turbine-Driven Locomotive.* H. Zoelly. (Mech. Eng.) Nov., '24.

New 70-Ton Capacity Gondola Car for the Wabash.* Ry. Rev. Nov. 1, '24.

Recent Types of Freight and Passenger Locomotives for Canadian National Railways.* Ry. Rev. Nov. 8, '24.

Passenger Car Equipment, Canadian National Rys.* Ry. Rev. Nov. 8, '24.

Pacific and Mikado Type Locomotives for Canadian Pacific Ry.* Ry. Rev. Nov. 8, '24.

60-Ton Capacity S. S. Box Car, Canadian National Rys.* Ry. Rev. Nov. 8, '24.

Low Temperatures in Refrigerator Cars.* M. E. Pennington. (Paper read before Fourth Int. Cong. of Refrigerating Industries.) Ry. Age Nov. 22, '24.

Prises d'Eau en Marche sur le Great Western Railway.* (Water Scoops in Operation on the Great Western Railway.) Rev. Gen. Oct., '24.

Graissement du Matériel Roulant des Réseaux Français.* (Lubrication of Rolling Stock on the French Railways.) Alexandre Grison. Ry. Gen. Oct., '24.

Le Développement des Transports par Wagons Frigorifiques sur les Réseaux Français pendant la Guerre.* (Development of Transportation by Refrigeration Cars on French Railways During the War.) Gen. Civ. Oct. 11, '24.

7. Use of Electricity

Die elektrischen Lokomotiven der französischen Hauptbahnen.* (Electric Locomotives on the French Main Line Roads.) Schw. Bauz. Oct. 4, '24.

Die Elektrifizierung der Österreichischen Bundesbahnen bis zu Beginn des Jahres 1924. (Electrification of the Austrian State Railway up to the Beginning of 1924). Schw. Bauz. Oct. 18, '24.

Die Wirtschaftlichkeit des elektrischen Betriebs der S. B. B. nach den neuesten Untersuchungen.* (The Economy of the Electric Drive on the Swiss State Railroads, According to the Latest Investigations.) W. Kummer. Schw. Bauz. Oct. 25, '24.

8. Stations, Engine Houses, Shops, Terminals

Report No. 2 On the Question of Shunting Yards.* Samuel T. Wagner. Int. Ry. Cong. Assoc. Oct., '24.

Canadian National Railways Engine Terminal at Moncton, N. B.* Ry. Rev. Nov. 15, '24.

Portland Terminals, Facilities are Modernized.* Ry. Age Nov. 15, '24.

Turntable Renewed in Record Time by Southern Pacific.* Eng. & Contr. Nov. 19, '24.

b. Special Railroads**3. Narrow Gauge. Light Railways**

Report No. 1 On the Question of Establishment of Light Railways.* H. Marriott. Int. Ry. Cong. Assoc. Oct., '24.

d. Street Railways, Elevated Railways, Subways**4. Track**

Observations on Track Structure.* H. P. Hevenor. Eng. & Contr. Nov. 19, '24. (From Elec. Ry. Jour.)

5. Rolling Stock

Automotrice Actionnée à l'Essence ou au Gaz Pauvre.* (Rail Motor Car Operating on Gasoline or Producer Gas.) M. Reseau. Ann. P., et C. July-Aug., '24.

January

e. Automobiles

2. Internal Combustion Engine Automobiles

Le XIX Salon de l'Automobile et du Cycle.* (The XIXth Automobile and Cycle Exposition.) G. Delanghe. Gen. Civ. Serial beginning Oct. 18, '24.

f. Aeronautics

1. General Articles

Betrachtungen über den Flugzeugbau.* (Observations on Airplane Construction.) O. Mader. Ver. deu. Ing. Oct. 4, '24.

2. Dirigible Balloons

Le Dirigeable "Zeppelin L. Z. 126" (Z. R. 3) Construit en Allemagne pour les Etats Unis.* (The Dirigible "Zeppelin L. Z. 126"—Z. R. 3—Built in Germany for the United States.) F. Loppé. Gen. Civ. Oct. 11, '24.

3. Aeroplanes

Production Airplanes of Metal.* Edmund Burke Carns. Mech. Eng. Nov., '24.

I. Municipal Water-Works. Agricultural Engineering

c. Dams and Reservoirs

Modern Methods of Constructing Reservoirs. R. E. McDonell. (Paper read before Southwest Water Works Assoc.) Mun. & Co. Eng. Oct. '24.
Repairing and Remodelling a Damaged Reservoir.* Engr. Oct. 31, '24.
Large Concrete Dam to be Built at American Falls.* Eng. N. R. Nov. 6, '24.
Building Black Canyon Irrigation Dam in Western Idaho.* Walter Ward. Eng. N. R. Nov. 20, '24.

e. Distribution of Water

An Improved Water Supply for Chicago and the Relation of Metering to Service. John Ericson. West. Soc. Engr. Oct., '24.
Metering the Water Supply of the City of Chicago.* Henry A. Allen. West. Soc. Engrs. Oct., '24.

Benefits of Water Main Cleaning. J. O. Endris. (Paper read before Indiana San. and Water Supply Assoc.) Can. Engr. Oct. 28, '24.
Electrical Applications to Irrigation Pumping.* R. H. Cates. A. I. E. E. Nov., '24.

Recovery of Return and Seepage Waters in California.* T. R. Simpson. Eng. N. R. Nov. 6, '24.

Station de Pompage dans la Loire au Pertuisset.* (Pumping Station on the Loire at Pertuisset.) Julien Laferrière. Gen. Civ. Oct. 25, '24.

Tuyaux en Béton Armé pour Conduites Forcées.* (Reinforced Concrete Pipes for Pressure Piping.) E. Monteux. Gen. Civ. Oct. 25, '24.

J. Sewerage. Sewage and Refuse Disposal

a. Sewers and Drains

Der Einfluss der Jahreszeiten auf den Abfluss in städtischen Kanalisationssanlagen.* (Effect of the Time of Year on the Run-Off in Municipal Sewerage Plants.) Friedrich v. Bülow. Gesund. Ing. Oct. 4, '24.

Abnutzung des Mauerwerks von Strassenkanälen.* (Wear of the Masonry of Sewers.) E. Stecher. Gesund. Ing. Oct. 18, '24.

Die besondere Bedeutung von Steinzeugrohren für Städteabwasserungsanlagen.* (The Special Importance of Earthen Pipes for Municipal Sewerage Plants.) Th. Heyd. Gesund. Ing. Oct. 25, '24.

Ein neuzeitlicher Städteentwässerungsplan für Gotha.* (A Modern City Sewerage Plan for Gotha.) Schutert. Gesund. Ing. Nov. 1, '24.

b. Sewage Disposal. Purification

The Bio-Aeration of Sewage.* Arthur John Martin. Inst. C. E. 1923-24, Pt. 1.

Sewage-Disposal in South Africa, with Special Reference to Sludge-Treatment at Pretoria.* Frank Walton Jameson. Inst. C. E. 1923-24, Pt. 1.

Modern Methods of Refuse Collection. J. A. Priestley. (Paper read before Int. Conference on San. Eng.) Can. Engr. Oct. 28, '24.

Tests of Air Pressure Losses in Activated-Sludge Plants.* R. J. Bushee and S. I. Jack. Eng. N. R. Nov. 20, '24.

Leuchtgas aus dem Klärslamm von Abwasser-Kläranlagen.* (Illuminating Gas from Sludge from Sewage Purification Plants.) G. Strassburger. Gesund. Ing. Sept. 27, '24.

K. Heat Engines

a. Steam Engines. Boilers

Les Tendances Actuelles dans la Construction des Turbines à Vapeur.* (Modern Tendencies in the Construction of Steam Turbines.) Ch. Dantin. Gen. Civ. Oct. 25, '24.

La Machine à Vapeurs Combinées—Eau et Ether—de Trembley, 1850. (The Combined Vapor Engine—Water and Ether—of Trembley, 1850.) F. Collin. Gen. Civ. Oct. 25, '24.

c. Gas and Oil Engines

Einspritz- und Verbrennungsvorgänge in Kompressorlosen Dieselmotoren.* (Injection and Combustion Processes in Diesel Engines without Compression.) V. Heidelberg. Ver. deu. Ing. Oct. 4, '24.

L. Electricity

b. Distribution and Transmission of Electricity

1. Power Plants

Small Industrial Plant Generates Current at Low Cost.* Power Nov. 11, '24.

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3. Distribution and Wiring of Electricity

A Study of Underground Distribution Systems for the City of New Orleans.* W. R. Bullard.
A. I. E. E. Nov., '24.

c. Electric Lighting**2. Uses**

Model State Law for Street and Highway Lighting. Mun. & Co. Eng. Oct., '24.
Street Lighting and Visibility. Edward J. Stewart. Mun. & Co. Eng. Oct., '24.
Electric Steam Generators.* L. G. deKermor. Eng. Inst. Can. Nov., '24.

d. Mechanical Uses of Electricity

2. Servomotors, Hoists, Elevators, Handling Machinery
Ueber elektrische Schweißung. Lichtbogenschweißung von Flusseisen.* (On Electric Arc Welding of Mild Steel.) H. Neese. Ver. deu. Ing. Oct. 25, '24.

M. Architecture**a. Educational, Government and Scientific Buildings**

Ueber die bauliche Ausgestaltung der Wiener technischen Hochschule.* (On the Architectural Arrangement of the Vienna Technical High School.) Fritz Golitschek. Oest. Ing. Arch. Ver. Oct. 3, '24.

b. Business and Commercial Buildings

Le Nouveau Hotel de la Banque de Bruxelles.* (The New Building of the Bank of Brussels.) Paul Philippart. Ann. T. P. Belg. Oct., '24.

c. Residences. Hotels

The Reconstructed Chateau Frontenac.* Ry. Rev. Nov. 8, '24.

d. Storage Buildings

Design Features of a Large Concrete Fuel House.* E. L. Crowe. Eng. & Contr. Oct. 22, '24.
Dust Explosions in Grain Elevators.* David J. Price. (Paper read before Am. Assoc. Port Auth.) Dock & Harbour Nov., '24.
Grain Elevator Operation with Automatic Box Car Unloader.* Ry. Rev. Nov. 8, '24.

f. Signals and Communication

Special Design for Hosiery Mill on Pacific Coast.* John R. Poteat. Eng. N. R. Oct. 30, '24.
Processes Affect Design of Automobile Factories.* F. A. Fairbrother. Eng. N. R. Nov. 20, '24.

g. Other Buildings

Das sog. "Goetheanum" in Dornach bei Basel.* (The So-Called "Goetheanum" in Dornach near Basel.) Schw. Bauz. Oct. 25, '24.

x. Miscellaneous

Die europäische Baukunst auf Java.* (European Architecture in Java.) Z. d. Bauver. Oct. 8, '24.

O. Administration. Legislation. Economics. Statistics**b. Economic Question of a General Character: Valuations, etc.**

Die Normung in Deutschland.* (Standardization in Germany.) F. Neuhaus. Ver. deu. Ing. Oct. 11, '24.

d. Administrative and Financial Management of Means of Communications**1. General Questions**

Equipment Expense and Rental.* (From pamphlet published by Assoc. Gen'l Contrs. of America.) Eng. & Contr. Oct. 22, '24.

La Stratégie des Transports et des Ravitaillements.* (The Strategie of Transportation and Supplies.) Marcel Peschadur. Rev. Gen. Oct., '24.

5. Railroads and Street Railways

Identification of Material Handling Costs Develops Unusual Possibilities.* Ry. Rev. Nov. 8, '24.

Les Transports en Commun de la Région Parisienne. Conditions Economiques d'Exploitation du Réseau.* (Public Passenger Transportation in the Region of Paris. Economic Considerations on the Operation of the System.) Ch. Dantin. Gen. Civ. Oct. 11, '24.

Q. Surveying and Geodesy

The Yellowhead Base Line.* F. A. McDiarmid. Can. Engr. Nov. 18, '24.

S. City Planning

Der internationale Kongress für Städtebau und Siedlungswesen in Amsterdam 1924.* (The International Congress for City Building and Housing, in Amsterdam, 1924.) Z. d. Bauver. Sept. 24, '24.

Wettbewerb für die Ausgestaltung des Burgplatzes in Essen.* (Competition for the Improvement of the Essen Town Square.) Roth. Z. d. Bauver. Oct. 15, '24.

Employment Service

The Engineering Societies Employment Service is under the joint management of the National Societies of Civil, Mining, Mechanical, and Electrical Engineers as a co-operative Bureau available only to their membership, and maintained by the contributions from the Societies and their individual members who are directly benefited.

Men Available.—Under this heading, brief announcements will be published without charge. These announcements will not be repeated, except on request received after an interval of one month. Names and records will remain in the active files of the Bureau for a period of three months and are renewable on request. Notice for *Proceedings* should be addressed to Employment Service, 33 West 39th Street, New York, N. Y., and should be received prior to the first of the month.

Opportunities.—A Bulletin of engineering positions available is published weekly and is available to members of the Societies concerned at a subscription rate of \$3 per quarter, or \$10 per annum, payable in advance. Positions which are not filled promptly as a result of publication in the Bulletin, may be announced herein.

Voluntary Contributions.—Members obtaining positions through the medium of this Service are invited to co-operate with the Societies in the financing of the work by nominal contributions made within thirty days after placement, on the basis of \$10 for all positions paying a salary of \$2 000 or less per annum; \$10 plus 1% of all amounts in excess of \$2 000 per annum; temporary positions (of one month or less), 3% of total salary received. The income contributed by the members, together with the finances appropriated by the four Societies named, will be sufficient, it is hoped, not only to maintain but to increase and extend the service.

Replies to Announcements.—Replies to announcements published herein, or in the Bulletin, should be addressed to the key number indicated in each case, with a two-cent stamp attached for re-forwarding, and forwarded to the Employment Service at the address given. Replies received by the Bureau after the positions to which they refer have been filled, will not be forwarded.

POSITIONS AVAILABLE

MECHANICAL-STRUCTURAL ENGINEER, with thorough training and good practical experience, with or without teaching experience, for staff of leading school of technology. Subordinate position and

moderate salary at start, but right man may expect rapid advancement. Give full personal and professional particulars. Location, New York. R-5051.

MEN AVAILABLE

SALES ENGINEER, M. Am. Soc. C. E.; age 41; married. Seventeen years general engineering and industrial plant design; three years sales experience. Position desired in Metropolitan District. B-3987.

city engineer, five years; and water supply and sewers, four years. Holds commission Major Engr. O. R. C. Available shortly. A-5380.

CITY ENGINEER OR CITY MANAGER, M. Am. Soc. C. E.; age 56. Broad experience; in railroad construction and maintenance, twelve years'; superintendent of construction or concrete mass, wharfs, dams, and buildings, five years; street and road paving, four years; assistant and

CIVIL ENGINEER, M. Am. Soc. C. E.; technical graduate. Twenty-eight years' experience; specialist on water-works, sewers, highways, pavements. Experienced on large construction projects, excavations, harbor work. Has been in charge of construction forces and chief engineer directing contracts, preparing reports.

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EMPLOYMENT SERVICE

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examinations of projects in North America, South America, and Europe. New York and New Jersey licenses. Speaks and writes Spanish and French. B-5519.

CIVIL ENGINEER, Jun. Am. Soc. C. E. Graduate, Univ. of Wisconsin; age 27; single. Three and one-half years A-1 experience, covering reinforced concrete design and detailing. General layout, design, detailing, and construction of hydro-electric development. Six months in responsible charge of tunnel construction. B-6312.

CONSTRUCTION ENGINEER, Jun. Am. Soc. C. E.; graduate C. E. Seven years' experience on surveys, office and field, on construction of hydro-electric and steam power plants. Two years responsible charge of construction. B-8144.

CONSTRUCTION ENGINEER OR SUPERINTENDENT, M. Am. Soc. C. E., on paving and highways. Fifteen years' technical and practical experience in charge of city, county, and State contracts in East and South. Accustomed to plan, organize, and handle own operations. Desires change offering permanent connection with large engineering or contracting organization. B-8270.

CONSTRUCTION ENGINEER AND ADMINISTRATOR, Jun. Am. Soc. C. E.; graduate; age 27; married. Five years construction and maintenance, railways, bridges, concrete structures, buildings, etc. Also, design, drafting, surveying reports. Handled 500 men on 325 miles as assistant and acting roadmaster. B-8521.

RECENT GRADUATE, Purdue University; married. Now in charge of all engineering work for company developing subdivision, design and construction, drafting, surveying. Has had some experience as laborer on concrete construction. Present

salary is \$150. Desires position with engineer or contractor engaged in concrete design or construction. Location immaterial. B-8962.

RAILROAD ENGINEER, Assoc. M. Am. Soc. C. E.; age 39; married. Fourteen years railroad experience, including location, construction, grade separation, yard construction, estimating, drafting. Has prepared several reports on economy of grade reductions and re-alignments, also plans and estimates for more than 500 miles of new line, of which 250 miles has been built or is now under construction. At present, assistant engineer with railroad system. Desires permanent connection. B-9037.

EXECUTIVE ENGINEER, M. Am. Soc. C. E., age 39; married; technically educated. Responsible experience of eighteen years in industrial operation, engineering, and general construction. Excellent credentials. B-9048.

HIGHWAY ENGINEER, M. Am. Soc. C. E.; graduate. Sixteen years' experience on surveys, design, construction, maintenance of practically all classes of roads; ten years with Philippine Government; three years State highway department; three years county engineer. Employed. Desires change to permanent location in or near college town. Will travel. Has successfully administered road and bridge budget of \$4 000 000 per year. Would teach. B-9063.

CIVIL ENGINEER, Jun. Am. Soc. C. E.; M. I. T. graduate. Four years' varied experience, two years responsible charge. Qualified for position as junior engineering executive. Particularly desires to enter the field of transportation, especially on development of new projects. Single; best of health. Will go anywhere. B-9065.

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Membership

(From November 5 to December 2, 1924)

Additions

		Date of Membership.
ANDERSON, Valentine. Asst. Engr., Transit Comm. (Res., 512 West 180th St.), New York, N. Y.....	Assoc. M.	June 16, 1924
BAKER, Thomas Wallace. Prin. Asst. Engr., Hurley-Mason Co., 925 Gasco Bldg., Portland, Ore.....	M.	Oct. 21, 1924
BEHRMAN, Isadore Ellis. 1318 Chisholm St., New York, N. Y.....	Jun.	Oct. 4, 1910
BEHRMAN, Isadore Ellis. 1318 Chisholm St., New York, N. Y.....	Assoc. M.	Mar. 14, 1916
BRIER, William Wallace. Pres. and Engr., Western Reinforced Concrete Pipe Co. of California, 204 Kirkham St., San Francisco, Calif.....	M.	Oct. 21, 1924
BRIGHAM, Leslie Elijah. Asst. Prof. of Hydraulics and Irrig. Eng., Oregon Agrl. Coll. (Res., 304 Kings Rd.), Corvallis, Ore.)	Assoc. M.	Dec. 4, 1922
BROWN, Douglas MacNeil. Contr. Engr., Chicago Bridge & Iron Works, 30 Church St., New York (Res., 55 Hanson Pl., Brooklyn), N. Y.....	M.	Oct. 22, 1924
BROWN, Fred Melvin. City Mgr. (Res., 822 Third Ave., South), Bozeman, Mont.....	Assoc. M.	May 31, 1916
BYRNE, William Eugene. Box 1077, Long Beach, Calif.....	M.	Oct. 22, 1924
CHAMBERLIN, Earl William. Dist. Mgr., Fireproofing Dept., U. S. Gypsum Co., 647 Hanna Bldg., Cleveland, Ohio.....	Assoc. M.	May 15, 1917
CHURCH, Ellhu Cunyngham. Transportation Engr., Port of New York Authority, 11 Broadway (Res., 4 East 130th St.), New York, N. Y.....	Assoc. M.	June 24, 1914
DANGORIA, Chandulal Chotalal. Care, City Impvt. Board, Hyderabad, Deccan, India.....	Assoc. M.	Oct. 21, 1924
DIBBELL, Herbert Ashton. Asst. Engr., Board of Water Supply, City of New York, Shokan, N. Y.....	Assoc. M.	Oct. 21, 1924
DWYRE, Burton Golding. Project Engr., State Highway Dept., Silver City, N. Mex.....	Jun.	Oct. 21, 1924
ETCHEVERRY, Bernard Alfred. Cons. Engr.; Prof., Irrig. Eng., Univ. of California, 307 Agricultural Hall, Berkeley, Calif.....	Assoc. M.	June 1, 1909
FITTERER, John Conrad. Prof., Civ. and Irrig. Eng., Coll. of Eng., Univ. of Wyoming (Res., 511 South 11th St.), Laramie, Wyo.....	Assoc. M.	Oct. 22, 1924
FORSBECK, Carl Davidson. Cons. Engr., Box 414, Everett, Wash.....	Assoc. M.	Oct. 21, 1924
FOWLER, Frederick Hall. Cons. Engr., 1300 First National Bank Bldg., San Francisco, (Res., 221 Kingsley Ave., Palo Alto), Calif.....	Jun.	April 3, 1906
FRANCIS, Ernest David. Engr., Weeks & Day (Res., 666 Forty-first Ave.), San Francisco, Calif.....	Assoc. M.	April 2, 1912
FUDGE, Russell Gerard. 300 West Church St., Elmira, N. Y.....	Jun.	Oct. 21, 1924
GAMBLE, Raleigh Welch. Supt. of Streets, City Hall, Milwaukee, Wis.....	Assoc. M.	May 19, 1924
GANGADHARAM MOODLIAR, Lallipet. Secy., Public Works Dept., Irrig. Branch, Hyderabad (Deccan), India.....	Jun.	Oct. 21, 1924
JAMES, Carl. Asst. Chf. Engr., Alabama Power Co., Birmingham, Ala.....	M.	May 19, 1924
JANSEN, Edward Clinton. Hydro-Elec. Engr., Public Service Co. of Colorado, 352 Gas and Elec. Bldg., Denver, Colo.....	Assoc. M.	Oct. 21, 1924
JENNINGS, Louis James. 1516 Beverly Pl., Albany, Calif.....	M.	Aug. 31, 1915
HICKMAN, Harry Anderson. Junior Engr., U. S. Engr. Office, Nashville, Tenn.....	Assoc. M.	Oct. 22, 1924
HUANG, Chi Yen. (C. Y. Huang & Ling Constr. Co.), 70 Kiangse Rd., Shanghai, China.....	Assoc. M.	May 19, 1924
HUBER, Earl Raymond. 1304 First National Bank Bldg., San Francisco, Calif.....	Jun.	Oct. 21, 1924
JEWELL, Albert Hartwell. Executive Secy., Health Conservation Assoc., 420 Hall Bldg., Kansas City, Mo.....	Assoc. M.	Jan. 14, 1918
JONES, Ralph Edson. Structural Draftsman, B. & L. E. R. R. (Res., 22 First Ave.), Greenville, Pa.....	M.	Aug. 9, 1920
KING, Arthur Caswell. Asst. Supt., Water-Works, City Hall, Taunton, Mass.....	Assoc. M.	Oct. 22, 1924
KRUSE, Otto V. Hydr. Engr., Larner Eng. Co., Atlantic Bldg., Philadelphia, Pa.....	Jun.	Oct. 21, 1924
KRUSE, Otto V. Hydr. Engr., Larner Eng. Co., Atlantic Bldg., Philadelphia, Pa.....	Assoc. M.	Sept. 4, 1906
KRUSE, Otto V. Hydr. Engr., Larner Eng. Co., Atlantic Bldg., Philadelphia, Pa.....	Assoc. M.	April 7, 1915
KRUSE, Otto V. Hydr. Engr., Larner Eng. Co., Atlantic Bldg., Philadelphia, Pa.....	M.	Oct. 22, 1924
KRUSE, Otto V. Hydr. Engr., Larner Eng. Co., Atlantic Bldg., Philadelphia, Pa.....	Assoc. M.	May 18, 1918
KRUSE, Otto V. Hydr. Engr., Larner Eng. Co., Atlantic Bldg., Philadelphia, Pa.....	M.	Oct. 22, 1924

January, 1925.]

MEMBERSHIP—ADDITIONS

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		Date of Membership.
LANG, Shi Kule.	Care, Shansi Univ., Tai Yuan Fu, Shansi, North China.....	M. Aug. 4, 1924
LEISTER, John Swivel.	56 Martense St., Brooklyn, N. Y.....	Assoc. M. May 19, 1924
MACY, Glenn Davis.	204 Two Republics Life Bldg., El Paso, Tex.	Assoc. M. Oct. 21, 1924
MAGUIRE, John Joseph.	Asst. Engr., M. of W. Dept., Central Argentine Ry., Oficina Ingeniero Distrito, Casilda F. C. C. A., Argentine Republic.....	Jun. May 19, 1924
MARSH, Carleton Dewey.	Gen. Contr. (Rowe Constr. Co.), Woodsville, N. H.....	Assoc. M. Oct. 21, 1924
MARTIN, George Harris, Jr.	Field Engr., Frederick Snare Corporation, 114 Liberty St., New York (Res., 15 East Franklin St., Tarrytown), N. Y.....	Jun. June 16, 1924
METCALFE, Joseph Davis.	Res. Engr., State Highway Dept., Greenville, Tex.....	Assoc. M. April 2, 1913
MILLER, Robert Montfort.	Res. Engr., Virginian Ry., R. F. D. No. 1, Box 230, Sewalls Point, Norfolk, Va.....	M. Oct. 22, 1924
MONIWA, Chujiro.	Cons. Engr., City of Tsu; also Engr., Dept. of Home Affairs, Japanese Imperial Govt., 46 Zoshigayamachi, Takatamachi, near Tokyo, Japan.....	Assoc. M. April 19, 1920
NISHKIAN, Leon Hagop.	Cons. Engr., 853 Monadnock Bldg. (Res., 158 Merced Ave.), San Francisco, Calif.....	M. Oct. 21, 1924
NORTON, Arthur Henry Whiteley.	With E. G. Graves, R. 1-Box 12 D, San Antonio, Tex.....	Assoc. M. Oct. 21, 1924
OLDHAM, Jennings Bryan.	Engr., Service Dept., Texas Portland Cement Co., 1001 Praetorian Bldg., Dallas, Tex.....	Jun. May 19, 1924
OLDS, Robert Franklin.	Constr. Engr., Board of the Hudson River Regulating Dist., 44 Howard St., Albany, N. Y.....	Assoc. M. Nov. 12, 1913
PAXTON, Thomas Preston.	Cons. Engr., Box 937, Okmulgee, Okla.....	M. Oct. 22, 1924
PHILLIPS, Robert James.	Trade Commr., U. S. Dept. of Commerce, American Embassy, Tokyo, Japan.....	Assoc. M. June 11, 1917
POMYKALA, Edmund Stanley.	Box 877, Wilson Dam, East Florence, Ala.....	M. Oct. 22, 1924
RIDDELL, John Calvin.	Beatrice, Nebr.....	Jun. Dec. 6, 1920
SANDHAM, John Edmund.	Asst. Civ. Engr., Buenos Aires Great Southern Ry., Via y Obras, F. C. del Sud Guanahani 322, Buenos Aires, Argentine Republic.....	Assoc. M. Oct. 21, 1924
SMILLIE, Ralph.	Designing Engr. with New York Bridge & Tunnel Comm. and New Jersey Interstate Bridge & Tunnel Com., 238 Broadway, New York (Res., 120 Primrose Ave., Mount Vernon), N. Y.....	Jun. Assoc. M. Sept. 9, 1919
SMITH, Elmer Lewis.	Draftsman and Chf. of Party, Water Dept. (Res., 42 West Bellevue Drive), Pasadena, Calif.....	M. Oct. 22, 1924
SMITH, William Durkee.	Cons. Engr. (Hedrick, Smith & Frost), 415 Abington Bldg., Portland, Ore.....	Jun. May 19, 1924
SPELMAN, Harold James.	Div. Engr., State Road Comm., Box 426, Huntington, W. Va.....	Assoc. M. Oct. 1, 1913
SUMMERS, Richard Elvin Jewell.	Chf. Engr., H. K. Ferguson Co., 4900 Euclid Ave. (Res., 1330 East 141st St.), Cleveland, Ohio.....	Jun. Nov. 4, 1914
SUN, Yu-Fong.	Philander. Section Engr., Peking Suyuan Line, Chinese Govt. R. R., Pintichuan Station (Res., 2 Taku Rd.), Tientsin, China.....	Assoc. M. April 19, 1920
SVENSSON, Viktor.	Draftsman and Computer, Roger M. Freeman, 8 West 40th St. (Res., 149 St. Marks Ave., Brooklyn), N. Y.....	M. Oct. 4, 1924
TOWNSEND, Frank Martin.	Res. Engr., So. Pac. R. R. of Mexico, Agua, Caliente, Ariz.....	Assoc. M. Oct. 21, 1924
TOWNSEND, Frank Thorn.	Dean, Technical Dept., Extension Div., United Y. M. C. A. Schools, 347 Madison Ave. (Res., 136 West 78th St.), New York, N. Y.....	Assoc. M. April 2, 1913
VOGEL, Karl Eugene.	Vice-Pres. and Gen. Mgr., Omaha Steel Works, 48th and Leavenworth Sts. (Res., 3724 Lincoln Boulevard), Omaha, Nebr.....	M. Oct. 22, 1924
WALSER, Daniel Charles.	Hydr. Engr., Charles B. Hawley & Co., Inc., 1104 Munsey Bldg., Washington, D. C.....	Assoc. M. Feb. 6, 1912
WARE, Howard Thomas.	Contr. 1614 East Missouri St., El Paso, Tex.....	M. Oct. 22, 1924
WEAVER, Charles Joseph.	Civ. and Cons. Engr. (Res., 63 Third St.), Waterford, N. Y.....	Jun. Mar. 7, 1921
WHITE, Harry Lively, Jr.	Engr. Insp., Seaboard Air Line Ry., 1220 Royster Bldg. (Res., 6-C St. Elms Court, 1233 Westover Ave.), Norfolk, Va.....	M. Oct. 22, 1924
WHITNEY, Charles Smith.	Cons. Engr., 214 Mason St., Milwaukee, Wis.....	Assoc. M. Oct. 4, 1910
		Jun. Dec. 18, 1916
		M. Oct. 22, 1924
		Assoc. M. Aug. 31, 1915
		M. Oct. 22, 1924
		Jun. May 19, 1924
		Jun. Dec. 2, 1914
		Assoc. M. Mar. 9, 1920
		M. Oct. 22, 1924

		Date of Membership.
WIDDICOMBE, Stacey Harrison. Chf. Engr., Shoemaker Bridge Co., Pottstown, Pa.....	Jun. Assoc. M.	Mar. 12, 1918 April 25, 1921
WILBUR, William Edward. Associate Engr., B. H. Klyce, 506 Fourth and First National Bank Bldg., Nashville, Tenn.....	M. Assoc. M.	Oct. 22, 1924 Oct. 8, 1918
WILSON, William Henry. Res. Bridge Engr., Tennessee Highway Dept., Box 353, McMinnville, Tenn.....	M. Assoc. M.	Oct. 22, 1924 Nov. 25, 1919
WITTEN, Donald. Cons. Engr. (Wood & Witten), 246 Lynch Bldg., Tulsa, Okla.....	M. Assoc. M.	Oct. 22, 1924 Sept. 10, 1918

Deaths

BENSON, Orville. Elected Member, June 5, 1901; died November 18, 1924.
 BRYAN, Fred Asdel. Elected Member, December 1, 1908; died July 23, 1924.
 BURNHAM, George, Jr. Elected Junior, January 6, 1875; Affiliate, July 2, 1890; died November 22, 1924.
 DEANS, John Sterling. Elected Associate Member, September 9, 1919; died August 18, 1924.
 FITZMAURICE, Sir Maurice. Elected Honorary Member, June 19, 1922; died November 17, 1924.
 HARPER, John Lyell. Elected Member, June 5, 1907; died November 27, 1924.
 HOFMAN, Joseph. Elected Member, August 9, 1920; died April 8, 1924.
 MATHEWS, Edward Gilbert. Elected Associate Member, June 24, 1914; died July, 1924.
 MAYERS, Hugh Lester. Elected Associate Member, February 25, 1924; died October 25, 1924.
 TALLMAN, Leroy. Elected Associate Member, February 2, 1909; died November 30, 1924.
 WHIPPLE, George Chandler. Elected Associate Member, September 6, 1899; Member, October 6, 1908; died November 27, 1924.

Total Membership of the Society, December 2, 1924

Members	4 972
Associate Members.....	5 489
Corporate Members.....	10 461
Honorary Members.....	12
Juniors	739
Affiliates	166
Fellows	8
Total	11 386